

## Errata and updates for ASM Exam C/Exam 4 Manual (Eighteenth Edition) sorted by page

- [1/22/2018] On page 25, in the solution to exercise 1.20, on the second line, change  $E[X^4]$  to  $E[(X - \mu)^4]$ .
- [12/8/2016] On page 63, on the second line of the answer to Example 4E, replace  $1dx$  with  $1 dt$ .
- [5/25/2017] On page 143, on the second and third lines of the answer to Example 8G, change 1.174 to 1.1774.
- [1/5/2017] On page 149, in the heading of Table 82., change Meaaures to Measures.
- [7/24/2017] On page 315, in exercise 18.22, on the second-to-last line of the question, replace “expected claim amounts” with “expected aggregate claim amounts”.
- [11/13/2016] On page 445, in the solution to exercise 26.3, on the last line, change  $\sqrt{0.1699}$  to  $\sqrt{0.001699}$ .
- [6/19/2017] On page 477, in exercise 27.23(A), on the second line, change “as high than” to “as high as”.
- [11/21/2016] On page 484, in the solution to exercise 27.17, on the second line, replace theta in the exponent with  $\theta$ .
- [11/21/2016] On page 484, in the solution to exercise 27.18, replace the third, fourth, and fifth lines with

$$\begin{aligned} 1 - 0.5(y^2 + y) &= 0.5 \\ y^2 + y &= 1 \\ y^2 + y - 1 &= 0 \end{aligned}$$

- [5/18/2017] On page 507, in exercise 28.25, the question in the SOA sample is now question 74 instead of 73A.
- [11/24/2016] On pages 681–682, replace the solution to exercise 34.32 beginning with the third paragraph with the following:

If you aren't comfortable calculating the Erlang distribution function, an alternative method for calculating  $\Pr(Z > 20)$ , is to calculate it directly. Once again,  $Z = X_1 + X_2$ , where  $X_1$  and  $X_2$  are the two exponential observations. We want  $\Pr(Z > 20)$ . By the Law of Total Probability, conditioning on  $X_1$ ,

$$\Pr(Z > 20) = \int_0^{\infty} \Pr(Z > 20 \mid X_1 = x_1) f_{X_1}(x_1) dx_1 \quad (*)$$

The integral's lower bound is 0 since  $Z$  cannot be less than 0.  $X_1$  is exponential with mean 6, so

$$f_{X_1}(x_1) = \frac{e^{-x_1/6}}{6} \quad x_1 \geq 0$$

$\Pr(Z > 20 \mid X_1 = x_1)$  is equal to 1 if  $X_1 \geq 20$ , since  $X_2 \geq 0$  and  $Z = X_1 + X_2$ . If  $X_1 < 20$ , then  $Z > 20$  only if  $X_2 \geq 20 - X_1$ . Since  $X_2$  is exponential with mean 6,

$$\Pr(X_2 \geq 20 - x_1) = e^{-(20-x_1)/6}$$

We can now rewrite equation (\*) as follows:

$$\begin{aligned} \Pr(Z > 20) &= \int_0^{20} \Pr(Z > 20 \mid X_1 = x_1) f_{X_1}(x_1) dx_1 + \int_{20}^{\infty} \Pr(Z > 20 \mid X_1 = x_1) f_{X_1}(x_1) dx_1 \\ &= \int_0^{20} e^{-(20-x_1)/6} \left( \frac{e^{-x_1/6}}{6} \right) dx_1 + \int_{20}^{\infty} \frac{e^{-x_1/6}}{6} dx_1 \end{aligned}$$

Let's evaluate these two integrals.

$$\begin{aligned}\Pr(Z > 20) &= \int_0^{20} \frac{e^{-20/6}}{6} dx_1 + e^{-20/6} \\ &= \frac{20}{6} e^{-20/6} + e^{-20/6} \\ &= \left(1 + \frac{20}{6}\right) e^{-20/6} \\ &= \frac{13}{3} e^{-10/3} = \boxed{0.154587}\end{aligned}$$

- [6/12/2017] On page 720, in the solution to exercise 36.1, on the first line, change "to heavy" to "too heavy".
- [5/8/2017] On page 751, on the fourth line, change "mean squared" to "mean" (delete the word "squared").
- [12/14/2016] On page 759, on the third line of Section 38.5, replace "Section 38.5" with "Section 35.5".
- [6/18/2017] On page 792, one line below equation (39.1), change "likelihood" to "loglikelihood".
- [1/9/2018] On page 794, in the table for exercises 39.6 and 39.7, change the exponential negative likelihood 425.3 to 423.3.
- [6/18/2017] On page 799, in the solution to exercise 39.7, change the AIC calculation for Exponential to "425.3 + 1 = 426.3".
- [7/7/2017] On page 904, two lines below the fifth displayed line, change  $E[X_{n_1} | \theta]$  to  $E[X_{n+1} | \theta]$ .
- [5/16/2017] On page 1065, on the fourth line of the fourth paragraph, delete the words "observations a weight of 3/12."
- [1/13/2017] On page 1114, in exercise 56.15, on the last line of the table, delete "Claims".
- [6/2/2017] On page 1236, in the solution to exercise 62.16, on the first line, add "be" between "not" and "a".
- [11/15/2016] On page 1432, in the solution to question 30, replace  $E[(X - 10,000)_+] - E[(X - 500)_+]$  with  $E[(X - 500)_+] - E[(X - 10,000)_+]$ .
- [10/15/2017] On page 1442, in the solution to question 24, on the last line of the page, delete the 0 after the equals sign.
- [10/29/2017] On page 1457, in the solution to question 30, on the third line, add a right parenthesis "after  $x = 3$ ".
- [10/29/2017] On page 1462, on the fourth line, change "fourth power" to "fourth root".
- [9/6/2017] On page 1463, in the solution to question 15, on the first line, change "age-0" to "age-30".
- [11/6/2017] On page 1601, in the solution to question 29, on the sixth line, change  $(\alpha)$  on the left side of the equation to  $l(\alpha)$ .
- [11/6/2017] On page 1601, in the solution to question 30, on the last line of the page, delete the first 1 on the right side of the equation.
- [6/23/2017] On page 1601, in the solution to question 22, on the first displayed line, add a sum sign after the big bracket:  $\sum m_i(x_i - \bar{x})^2$ .